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AUTHOR Silver, Rawley
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ABSTRACT

This study examined the cognitive skills and attitudes toward self and others in samples of independent seniors and young men and women. Three proceedings were used to address questions of age or gender differences. Study 1 (N=95) compared the scores of older adults (approximate age range, 64-95 years) on the Silver Drawing Test of Cognition and Emotion (SDT) Drawing from Imagination Task to those of young adults (age range 20-50 years, from three colleges). Study 2 (N=73) analyzed SDT Predictive Drawing scores of senior and young adults. Study 3 examined Predictive Drawing scores using four age groups: 53 children, 66 adolescents, 51 young adults, 36 senior adults. The test instrument is described. Methods used include statistical analyses of mean scores, group performances in top or bottom range scores, and the responses of particular individuals. No significant age differences were found between young and independent older adults in ability to solve conceptual problems visually, the use of humor, or drawing about unfortunate subjects of stressful relationships. The difference in findings between these studies and the literature on older adults based on those in institutional settings is discussed. Control over one's activities may be a critical factor in successful aging; fear of losing this control may have adverse effects on cognition and emotional well-being. Data analyses and examples of drawings are appended. (Contains 12 references.) (EMK)

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DIFFERENCES AMONG SENIOR AND YOUNG, MEN AND WOMEN IN ATTITUDES AND COGNITION

Rawley Silver, Ed.D., ATR-BC, HLM
70 John Ringling Blvd #1603
Sarasota, Fl 34236
Phone: (941) 361 7521, Fax 363 9505

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Abstract

Although much is known about senior adults in nursing homes, little is known about the attitudes and cognitive skills of those who are psychologically, physically, and financially independent. This lack of knowledge contributes to false beliefs about aging.

The present study examined cognitive skills and attitudes toward self and others, in samples of 57 senior, and 51 young men and women. The young adults attended colleges or participated in college audiences. The seniors, ages 64 to 95, lived independently in separate households and two retirement residences. Their responses to the Predictive Drawing and/or Drawing from Imagination tasks of the *Silver Drawing Test of Cognition and Emotion* were assessed on 5-point rating scales. To assess attitudes, responses were scored on Emotional Content and Self-Image scales ranging from strongly negative to strongly positive attitudes toward the subjects portrayed. To assess cognitive skills, responses were scored for ability to predict changes in the appearance of objects, and ability to represent (ranging from imitative to highly original and expressive). In addition, adult scores were compared with scores of children and adolescents.

Three procedures were used to address questions of age or gender differences: statistical analysis of mean scores, top and bottom range scores, and individual responses. No significant age differences between independent seniors and young adults were found, but gender differences appeared to significant degrees. Top and bottom range scores yielded infomation eclipsed by statistical analyses. The findings support the view that cognitive skills and emotions remain stable into old age unless extrinsic factors intervene. The findings also suggest that ability to make autonomous decisions may be a critical factor in successful aging.

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Although much is known about aging adults in nursing homes, little is known about those who are independent - physically, financially, and psychologically. Since few are interested in taking tests, investigators tend to study those who are less able to make autonomous decisions about their lives. This may explain why research on aging tends to emphasize losses. As Rowe and Kahn observed (1987), it also tends to underestimate the effects of psychological and social experiences, such as lack of control over one's activities which has adverse effects on emotional states and subjective well-being. Schaie and Green (1985) suggest that much of the loss considered intrinsic to aging is caused in part by extrinsic factors, and may be preventable.

How do the cognitive skills and attitudes of independent, aging men and women compare with those of younger age and gender groups? Would they respond to questions if assured of anonymity, and if the tasks were presented by another aging adult?

These questions prompted the present study of age and gender differences, and similarities, in cognitive skills and attitudes toward self and others. Assessments were based on responses to two tasks: Drawing from Imagination and Predictive Drawing, subtests of the *Silver Drawing Test of Cognition and Emotion* (Silver, 1983/1990/1996). To assess attitudes, responses were scored on rating scales ranging from strongly negative to strongly positive attitudes expressed toward the subjects chosen and portrayed. To assess cognitive skills, responses were scored on rating scales ranging from high to low levels of ability to predict and represent changes in the appearance of objects. The scores of senior adults were compared with the scores of young adults, adolescents, and children. Individual and group performances were then analyzed, and discussed in the present study.

Background

The importance of maintaining a sense control over one's life, and the fear of losing control, was demonstrated in a study of hospitalized, seriously ill patients who were asked how they felt about going to a nursing home permanently (Mattimore, Wenger, Desbiens, Teno, Hamel, Liu, Califf, Conners, Lynn, & Oye (1997). Their responses were assessed on a rating scale ranging from "very willing," to "would rather die". Of 3,262 patient responses, 30% said they would rather die. These investigators also found that doctors and families often misjudged their patients' feelings about nursing home care.

Variability also is important in understanding the aging process. Variability among individuals seems to increase in old age. According to Spaniol (1997), one of the myths about aging is that there is little diversity among the elderly. She found drawings by older adults more diverse than drawings made at other life stages, and that their drawings are likely to reflect cognitive, affective, and physical differences.

Levy and Langer (1996) seem to agree. They observe that statistical analyses of mean scores ignore not only the great heterogeneity of old age, but also top and bottom range scores. They recommend that researchers look beyond the statistical analysis of groups to the performance of individuals, and remember that elders who are not interested in volunteering, never become part of research study samples.

Previous studies have found age and gender differences in the cognitive skills and attitudes measured by the *Silver Drawing Test of Cognition and Emotion (SDT)*. According to the *SDT* manual, cognitive scores increase gradually through the school years (Silver, 1996). This finding was supported by Brazilian investigators who standardized the test on 2,000 children and adults (Allessandrini, Duate, Dupas & Bianco, 1998). These investigators found *SDT*

scores dependent on the level of education, as well as independent of gender. Analyses of variance yielded differences in school grade and type of school. Adults whose education had been limited to elementary or high school had lower mean scores than most children. College graduates had higher scores than high school seniors. In emotional content, the authors found more negative than positive responses, and the rate of ambivalence very high. They also found that the trend of growth in mean scores was similar in both cultures, increasing gradually with grade and age level.

A study of the assumption that children and adults tend to represent themselves, directly or indirectly, when responding to the *SDT* Drawing from Imagination task, found that 531 children and adults drew pictures about subjects the same gender as themselves to a degree that was significant at the .001 level of probability (Silver, 1993a). The tendency peaked in childhood, declined from adolescents to younger adults, and reached its lowest level among older women.

A study of the emotional content of response drawings has found that negative attitudes were expressed more often by older adults than younger adults, adolescents, and children (Silver,1993, b). Proportionally more older women than young women or girls drew sad solitary subjects. Porportionally more older men than younger men, boys, or older women, drew pictures about stressful relationships. Even though negative feelings predominated in responses by older adults, they used humor more often than any other age group, more older men than older women.

A study of age and gender differences examined fantasies about the opposite sex expressed in responses to the *SDT* Drawing from Imagination task (Silver,1997). Approximately one in four (116) of 480 children, adolescents, and adults drew pictures about subjects of the opposite sex, the proportions

increasing with maturity. Several age and gender trends emerged. An analysis of variance found males scores significantly lower (more negative) than female scores. Both genders expressed more negative than positive feelings toward the opposite sex , peaking at the moderately negative (2 point) level, portraying their principal subjects as ridiculous or unfortunate. An age difference of borderline significance also emerged. The children and adolescents were more negative than the adults. There was no interaction. The findings suggested that drawings about the opposite sex may provide access to troubling relationships, conflicts, and opportunities for clinical discussion.

Two studies of the spatial abilities measured by the *SDT* Predictive Drawing and Drawing from Observation tasks found no significant gender differences among adolescents (Silver, 1996b, 1998). Chi-square analysis indicated that both males and females had lower scores in verticality than horizontality, more males than females.

The Present Study

Procedures

The first analysis examined the scores of 95 subjects who responded to the *SDT* Drawing from Imagination task. They included 17 male and 27 female senior adults, and 18 male and 33 female young adults.

A second analysis examined the scores of 73 individuals who responded to the *SDT* Predictive Drawing task: 10 male and 26 female seniors, 6 male and 32 female young adults.

A third analysis examined Predictive Drawing scores of 206 subjects in four age groups: 53 children, 66 adolescents, 51 young adults, and 36 seniors.

Participants

The seniors were asked if they would participate in a study of age and gender differences by responding anonymously to pencil-and-paper drawing

tasks that did not require art skills. Those who volunteered became the sample of senior adults who were, in effect, self-selected. Twenty of these volunteers specified their ages which averaged 80.8 years. The remaining participants specified their range of age in increments between 64 and 95 years. All seemed in reasonably good health, and all resided in Florida.

Twenty seniors lived in Community A, a retirement residence that provided many amenities and was relatively expensive; 16 had received college educations. Thirteen seniors lived in Community B, a retirement residence that provided fewer amenities and charged minimal fees. Although they were not asked about educational backgrounds, a staff member in Community B believed that most had not attended college. In addition, 10 seniors lived independently in their own homes in upper middle class socio-economic neighborhoods (all had attended colleges), and 14 seniors responded while attending a recreational art program provided by the city where they lived. Their educational and economic backgrounds were unknown. This sample of of seniors responded to the *SDT* Drawing from Imagination and/or Predictive Drawing tasks.

The young adults included 18 men and 33 women who had responded to the drawing tasks in previous studies. Their ages ranged between 20 and 50, with a mean of 28.7 years. They included a class of college freshmen in Nebraska and volunteers in two college audiences, one in New York , the other in Idaho.

The adolescents, ages 12 to 15, and the children, ages 9 to 11, also had responded to the drawing tasks in previous studies.

The Test Instrument

The *SDT* uses stimulus drawings to elicit responses which are scored on rating scales ranging between 1 and 5 points with 5 the highest score. In the Drawing from Imagination task, respondents are asked to choose two subjects

from a set of 15 stimulus drawings of people, animals, and things, then combine their choices into narrative drawings of their own. They are encouraged to change the stimulus drawings and include other subjects and ideas. When they finish drawing, they are asked to add titles or stories. Their responses are scored for emotional content, self images, and cognitive content.

In the Emotional Content scale, strongly negative themes, such as drawings about murder or suicide, score 1 point. Strongly positive themes, such as drawings about romance, score 5 points. Moderately negative and positive themes score 2 and 4 points respectively. Themes that are neither negative nor positive (unemotional), both negative and positive (ambivalent), or unclear, score 3 points.

In the Self-Image Scale, principal subjects portrayed as helpless or in mortal danger, score 1 point; unfortunate subjects, 2 points; fortunate subjects, 4 points; and powerful or effective subjects, 5 points. Ambivalent, ambiguous, or invisible subjects, such as the narrator, score 3 points.

Although the Drawing from Imagination task is used to assess three cognitive skills, the present study assessed only one, the Ability to Represent. In this Cognitive Scale, imitative response drawings score 1 point. Those that restructure stimulus drawings or stereotypes, score 3 points. Responses that are highly original, expressive, suggestive, or playful, score 5 points.

The Predictive Drawing tasks assess concepts of horizontality, verticality, and sequential order. Respondents are asked to predict changes in the appearance of objects by adding lines to outline drawings. To assess concepts of horizontality, they are asked to show how water would look if a bottle, half-filled, is tilted. To assess concepts of verticality, they are asked to show how a house would look if moved to a steep slope. To assess concepts of sequential order, they are asked to show how a glass would look if emptied

gradually. Responses are scored for levels of ability to predict and represent these concepts, based on observations by Piaget and Inhelder (1967) who devised the tasks and traced the development of the concepts through successive stages.

Although the *SDT* also includes a third task to assess concepts of space, Drawing from Observation, this task was omitted in the present study. Studies of the reliability and validity of all three tasks are reported in the *SDT* manual (Silver, 1996, 1998a).

Method

The study used three procedures to address questions of age or gender differences in *SDT* performance between senior adults and young adults: statistical analyses of mean scores, top and bottom range scores, and individual responses.

Results

Statistical Analyses

Gender and age group were the variables of interest in an Analysis of Variance. They included Emotional Content, Self-Image, and Cognitive Content in responses to the Drawing from Imagination task, and Horizontality, Verticality, and Sequencing in responses to the Predictive Drawing task.

The first study included 95 individuals (17 men and 27 women in the senior age group, 18 men and 33 women in the young adult group). There were no significant effects for age group in responses to the Drawing from Imagination task. For gender, however, a significant effect emerged in Self-Image scores ((F(1,91)=4.61, p<.05). Males had significantly higher scores (stronger self-images) than females (3.66 and 3.20 respectively). In Emotional Content scores, a borderline significant effect of gender emerged (F(1,91)=3.20, p<.10).

Females had significantly higher scores (portraying fortunate individuals or caring relationships more often than males (3.24, and 2.77, respectively).

In a study of the Predictive drawing scores of 73 individuals (10 men and 26 women in the senior age group, 6 men and 32 women in the young adult group) there was a trend toward an age group difference in horizontality ($F(1,69)=2.75$, $p<.15$.). Young adults had a higher score than senior adults (4.95 and 4.37 respectively). Gender differences in horizontality also emerged ($F(1,69)=8.14$, $p<.01$). Males scored higher than females (4.95 and 4.37 respectively).

Similarly, in ability to sequence, significant gender differences were found ($F(1,69)=4.23$, $p<.05$). Males scored significantly higher than females (4.70 and 3.74 respectively).

To further analyze for potential age difference, the sample was expanded to include four age groups (53 children, 66 adolescents, 36 seniors, 51 young adults). Several age trends emerged. For horizontality, there was a significant effect of age group ($F(1,196)=18.61$, $p<.0001$). Children (3.15) scored less than adolescents (4.17). Adolescents scored less than young adults (4.61) but did not differ from seniors (4.49). The young adults and senior adults did not differ.

For verticality, a main effect for age group emerged ($F(1,197)=12.30$, $p<.001$). Children (1.98) scored less than adolescents (2.64) who in turn scored less than adults (3.53) and seniors (3.32). The adult groups did not differ.

For ability to sequence, there was a borderline significant effect ($F(1,147)=2.68$, $p<.10$). Adolescents scored significantly higher than seniors (4.52 vs 3.95). Young adults scored in the middle (4.15) and did not differ from either group. Gender differences were also observed but not detailed here.

In general, it appears that there are few age-related changes in *SDT* performances. There may be a slight trend towards a decline in horizontality scores, but more study is needed to test this hypothesis.

Top and Bottom Range Scores

Although mean scores and statistical analyses yield valuable information, they do not reveal how groups performed in highest and lowest scores. An examination of these scores yielded useful information.

Cognitive Skills. In responses to the Drawing from Imagination task, proportionally more senior adults than young adults received the top score of 5 points (55% vs 41% respectively), as shown in Chart 1 and Table 1.

This trend was reversed for verticality in responses to the Predictive Drawing task. Substantially more young adults than seniors received the top score (54% vs 15% respectively), even though the difference between groups was not significant. This difference was tempered by the larger proportion of seniors receiving the next highest score, 4 points (35% vs19% respectively), as shown in Chart 2 and Table 1.

The differences between age groups in high scores was not found in low scores.

Emotional Content. Similar patterns of rising and falling scores emerged among seniors and young adults, as shown in Chart 3. In both groups, drawings about unfortunate subjects or stressful relationships predominated (32% seniors vs 33% young adults). In addition, 18% of both groups drew fantasies about powerful individuals or caring relationships, and less than 10% of either group drew sad individuals or life-threatening relationships (1 point).

Self-image. Again, the pattern of rising and falling scores was similar in both age groups, as shown in Chart 4. Although the self-images depicted by seniors tended to be more negative and less positive than the self-images of

young adults, a greater difference emerged in the neutral, 3-point score, suggesting that the seniors were more ambivalent, ambiguous, or unemotional (61% vs 45%, respectively).

Humor. Although there was no statistical analysis, the two groups were again alike. Almost one in four of the respondents in both age groups drew humorous fantasies, or used puns and word play (23% seniors vs 24% young adults).

Individual Responses to the Drawing from Imagination Task

The responses of five individuals are presented to illustrate the range of individual differences in attitudes toward self and others.

Figure 1 is the response of a woman, age 80, who chose the princess and the mouse from the *SDT* array of 15 stimulus drawings. She received the highest score, 5 points, in Emotional Content, because she responded with a drawing about caring relationships. She also scored 5 in Self-Image because she seems to identify with her principal subject, indicated by her use of the pronoun "I." In addition, she scored 5 points in cognitive skills, transforming the stimulus drawings she chose, and presenting a highly imaginative and well-organized idea.

Figure 2, a fantasy about being washed overboard in a storm, was the response of another woman, age 83. She portrayed her solitary subject in mortal danger without escape or rescue, scoring 1 point in Emotional Content and in Self-Image, her use of the pronoun "I" confirming that her subject represents herself. Strongly negative responses to stimulus drawing tasks have been associated with clinical depression (Silver, 1998). Unfortunately, her response was anonymous, precluding clinical follow-up.

Figure 3, "The snake and the mouse," was the response of a man, age 82 who chose the stimulus drawing snake and mouse. Since his meaning is

ambiguous and his protagonist unclear, he scored 3 points in both Emotional Content and Self-Image. Without discussion to clarify his intention, he could be the mouse, or the snake, or the narrator. The snake's embrace could be disastrous for the mouse or delicious for the snake. In cognition, his response is highly original, suggestive, and playful, scoring 5 points in cognition.

Figure 4, "The Reluctant Bride," was the response of an elderly woman who did not disclose her age. She chose stimulus drawings of a bride and a bed, then added her imaginary bridegroom. Her response scored 2 points in Emotional Content (moderately negative, implying a stressful relationship), 3 in Self-Image (she seems to identify with the frustrated bride), and 5 in cognition (highly original, suggestive, expressive, and playful).

Figure 5, about the girl who "lost everything, icecream and all!" was the response of a man, age 84, who chose the icecream soda in association with a subject of the opposite sex. His response scored 2 points in Emotional Content (moderately negative - his subject is dismayed, frustrated, and unfortunate; and 3 points in Self-Image (he seems to identify with the narrator rather than the girl) His response also illustrates the negative feelings expressed toward principal subjects of the opposite sex, found in a previous study (Silver, 1997).

Discussion

Attitudes toward self and others

This study found no significant age differences between independent seniors and young adults. In Emotional Content, scores followed similar patterns in both groups, as indicated in Chart 3. In Self image, both scores peaked sharply at the 3-point level (ambiguous, ambivalent or unemotional), and more seniors than young adults scored 3 points (Chart 4). This finding suggests that seniors tended to be more detached, less emotionally involved, perhaps an attribute of the wisdom sometimes attributed to old age. These findings support

the previous finding, that drawings about one's self predominated in responses by children, declined in adolescence, and dropped to their lowest levels among adults (Silver, 1993a).

Although no age differences emerged, gender differences appeared to a degree that was statistically significant. Men scored higher than women on the the Self-image scale, portraying powerful or effective subjects more often. Women scored higher than men on the Emotional Content scale, portraying fortunate individuals and caring relationships more often.

Cognitive Skills

Again, no significant age differences emerged. The seniors had higher cognitive scores in Drawing from Imagination but the difference did not reach significance. The young adults had higher scores in Horizontality but the difference did not reach significance (see Chart 1).

Top and Bottom Range Scores

It was surprising to find more seniors than young adults scoring 5 points in the cognitive skills associated with Drawing from imagination because age differences had not appeared in the statistical analysis of mean scores. How can this finding be explained when the reverse was found in the cognitive skills associated with Predictive Drawing?

Perhaps Predictive Drawing triggers thoughts about the objective world whereas Drawing from Imagination triggers thoughts and feelings about one's self and others. Since cognitive skills and emotions are not separate entities, it may be that these tasks elicit gender differences rather than age differences.

Verticality

In top verticality scores, substantial age differences (eclipsed in the statistical analysis) emerged. More young adults than seniors scored 5 points, and more seniors scored 4 points, indicating that the seniors drew vertical

houses without adequate support, as shown in Figure 6. These drawings could be metaphors for feeling unsteady on one's feet, representing the loss of support and balance, frequent in old age. Perhaps drawings of an unstable house on a mountain slope reflect changes in the perception of verticality.

Education also may have influenced the verticality scores. The seniors, most of whom did not disclose their educational backgrounds, were compared with young adults attending college. As cited above, Allessandrini *et al* (1998) found that college-educated Brazilians had higher *SDT*scores than adults with high school educations.

Horizontality and Sequencing

Men had significantly higher scores in both horizontality and sequencing. This finding prompted a closer look at the 13 senior women in Community A and the 13 in Community B.

The women in Community A had higher mean scores in both horizontality and sequencing than the women in Community B (4.38 vs 3.74 and 3.69 vs 3.38 respectively). The two groups were similar in age, averaging 79 and 80 years, and initially, in physical and financial independence, but those in Community A were more likely to sustain independence because they received additional services (weekly housekeeping, community dining room, staff on call 24 hours a day, assisted living and a nursing home on the campus).

Although the residents of Community B were eligible for home care and a daily meal delivered by "Meals on Wheels," its staff departed at 4 o'clock in the afternoon. If a crisis occurred, a court-appointed guardian could force a resident to leave. Some residents tried to conceal health problems, and even refused medical care.

Perhaps dread of becoming incapacitated, and anxiety about the future, interfered with the cognitive functioning of residents in Community B. Educational inequality also may also have affected their scores.

To summarize, no significant age differences were found between the independent senior adults and young adults in cognition, the use of humor, or the adult tendency to draw unfortunate subjects and stressful relationships.

The findings challenge false beliefs about aging, and support the view that cognitive skills and emotions remain stable into old age unless extrinsic factors, such as loss of independence intervene. A frail old body does not reflect infirmity of mind any more than a vigorous young body reflects high intelligence.

The findings also suggest that being able to make autonomous decisions may be a critical factor in successful aging, and that fear of losing autonomy may have adverse effects on cognition and emotional well-being.

Further investigation with larger samples of independent seniors may clarify the question whether those who participated in this study were special populations, or whether their performances were typical of independent senior adults.

I would like to thank Jena Daniels , M.A., and Madeline Altabe, Ph.D., for their assistance.

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SDT Drawing from Imagination and Verticality Scores of Senior and Young Adults

Chart 1
Cognitive Skills

Seniors_____
Young adults.....

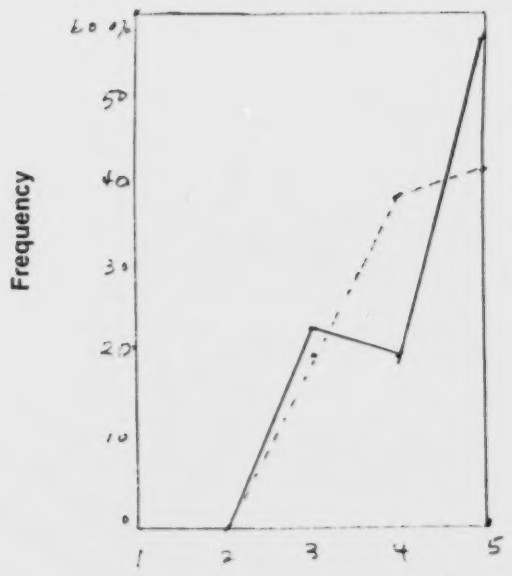

Chart 3
Emotional Content

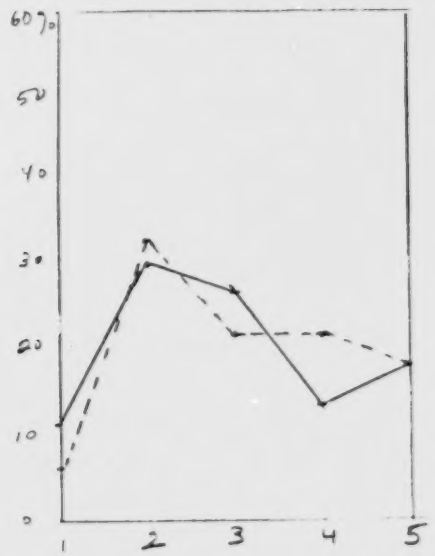

Chart 2
Verticality

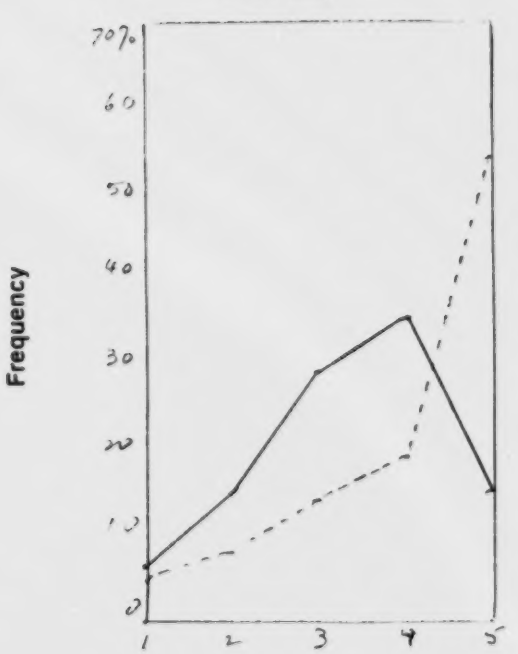

Chart 4
Self-Image

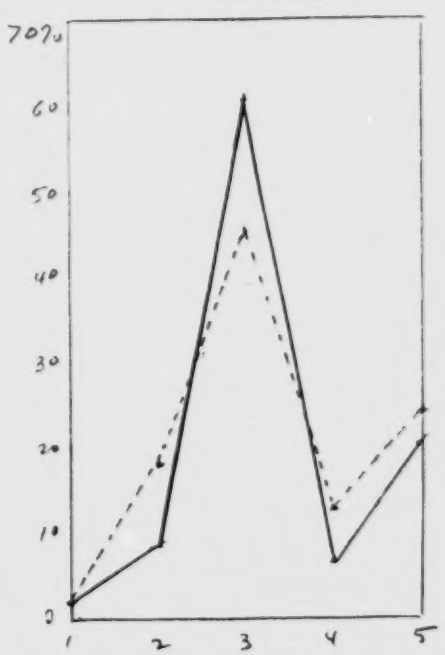

Table 1. Comparing SDT Performances of Older and Younger Adults

	Older Adults			Younger Adults		
			Drawing from Imagination			
a. Emotional Content						
	Score	N	%	Score	N	%
	1	5	11%	1	3	6%
	2	13	30%	2	17	33%
	3	12	27%	3	11	22%
	4	6	14%	4	11	22%
	5	8	18%	5	9	18%
		44			51	
b. Self-Image						
	1	1	2%	1	1	2%
	2	4	9%	2	9	18%
	3	27	61%	3	23	45%
	4	3	7%	4	6	12%
	5	9	20%	5	12	24%
		44			51	
c. Cognitive content						
	1	0	0	1	0	0
	2	0	0	2	0	0
	3	10	23%	3	10	20%
	4	9	20%	4	20	39%
	5	25	57%	5	21	41%
		44			51	
			Predictive Drawing			
a. Verticality						
	1	2	6%	1	2	5%
	2	5	15%	2	3	8%
	3	10	29%	3	5	14%
	4	12	35%	4	7	19%
	5	5	15%	5	20	54%
		34			37	
b. Horizontality						
	1	1	3%	1	0	0
	2	0	0	2	0	0
	3	6	17%	3	0	0
	4	8	23%	4	11	29%
	5	20	57%	5	27	71%
		35			38	

Responses to the SDT Drawing from Imagination task by Older Adults

Figure 1. by a woman age 80

There I was, all dressed for the costume party, a princess, no less. My little sister couldn't stop gigling. She had helped me raid the attic. I was really puzzled until I felt a movement in my crown. There was a little mouse, caught in the wires. We carefully removed him and put him back in the attic - the little prince mouse.

Emotional Content, 5 Self-Image, 5 Congition, 5

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Figure 2. by a woman age 83

I was on a sailboat - wrecked in a storm. I was washed overboard. I can only imagine sinking wondering what...No way to draw that because I don't have any image of dark space.

Emotional Content, 1 Self-image, 1 Cognition, 5

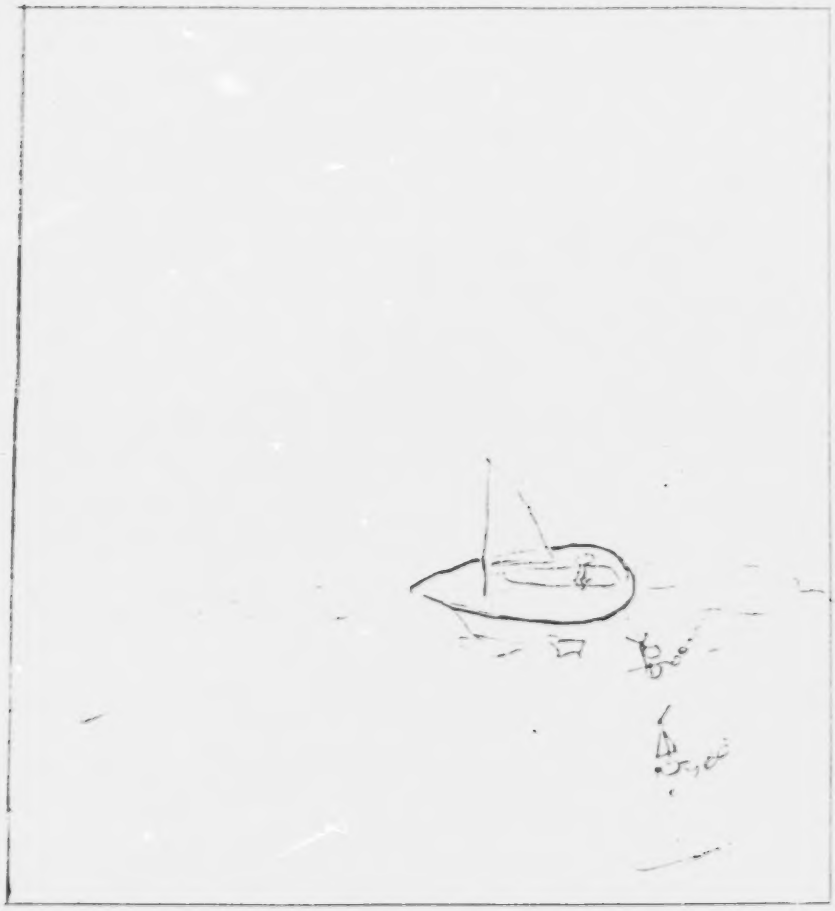

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Figure 3. by a man, age 82.

The snake and the mouse

Emotional Content, 3 Self-image, 3 Cognitiion, 5

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Figure 4. by an older woman, age unknown

The Reluctant Bride

Emotional Content, 2 Self-image, 3 Cognition, 5

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Figure 5. by a man, age 84

the girl was going to drink the ice cream soda. But suddenly she was startled by a snake which had crawled into the room. She gave a startled cry, the soda fell on the floor and she lost everything, icecream and all!

Emotional Content, 2 Self-Image, 3 Cognition, 5

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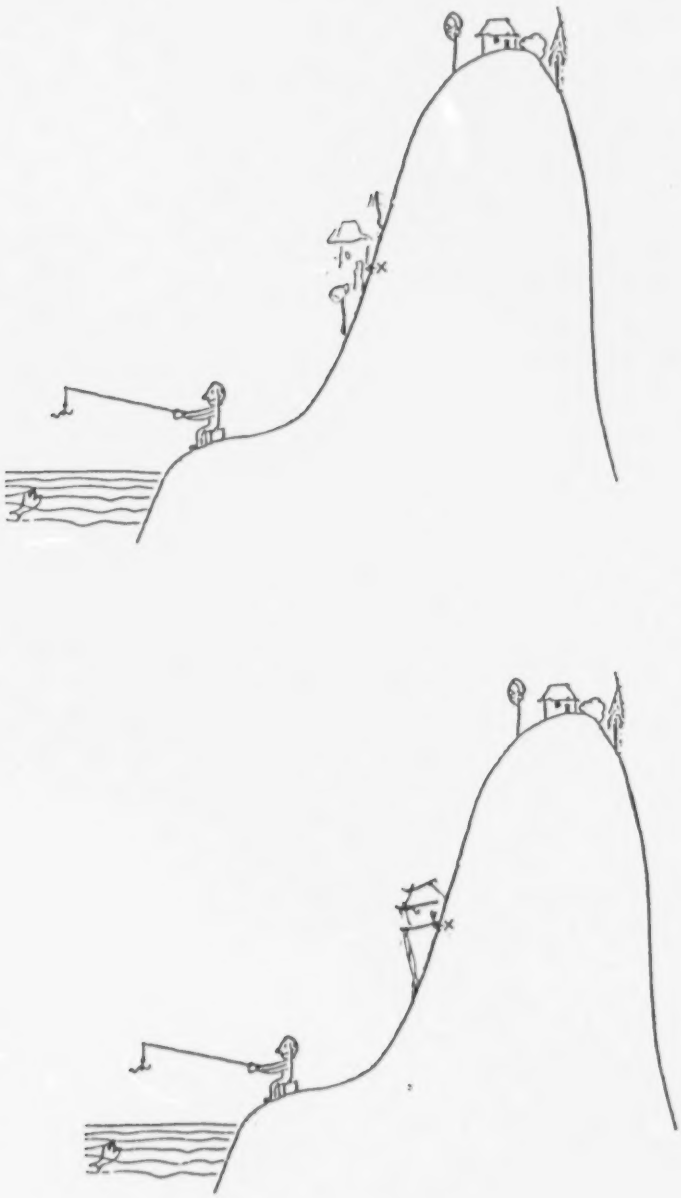
Figure 6. Responses to the Verticality Task scored 4 points



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